a photoresist layer deposited on the first dielectric layer.

2. (Cancelled) The substrate of claim 1, further comprising:

a) a silicon carbide etch stop deposited on the first dielectric layer *in situ* with the first dielectric layer;

b) a second dielectric layer deposited on the etch stop *in situ* with the silicon carbide etch stop.

3. (Cancelled) The substrate of claim 2, further comprising a silicon carbide anti-reflective coating deposited on the second dielectric layer *in situ* with the second dielectric layer.

4. (Cancelled) The substrate of claim 2, further comprising a photoresist deposited on the second dielectric layer.

6. (Cancelled) The substrate of claim 1, further comprising:

a) a silicon carbide anti-reflective coating deposited on the first dielectric layer *in situ* with the first dielectric layer;

b) a photoresist layer deposited on the anti-reflective coating.

7. (Cancelled) The substrate of claim 1, wherein the silicon carbide layer has a dielectric constant of about 5 or less.

8. (Cancelled) The substrate of claim 1, wherein the substrate has an effective dielectric constant of about 5 or less.

9. (Cancelled) The substrate of claim 1, wherein the silicon carbide layer is produced by a process in a plasma reactor having a chamber comprising providing an organosilane flow rate of about 30 to about 500 sccm as a silicon and a carbon source and a noble gas flow rate of about 100 to about 2000 sccm and further comprising reacting the silicon and the carbon in a chamber pressure range of about 3 to about 10 Torr with an RF power source supplying a power density of about 4.3 to about 10.0

watts per square centimeter to the chamber and a substrate surface temperature of between about 200° to about 400° C.

10. (Cancelled) The substrate of claim 3, wherein the silicon carbide layer, etch stop, and anti-reflective coating comprises silicon carbide having a dielectric constant less than 7.0.

11. (Cancelled) The substrate of claim 3, further comprising selecting the anti-reflective coating having a thickness that produces a reflectivity of about 7 percent or less.

12. (Cancelled) The substrate of claim 6, further comprising selecting the anti-reflective coating having a thickness that produces a reflectivity of about 7 percent or less.

13. (Cancelled) The substrate of claim 1, wherein the substrate comprises a damascene structure.

14. (Twice Amended) A method of forming a silicon carbide layer on a substrate, comprising:

introducing silicon, carbon, and a noble gas into a chamber;

initiating a plasma in the chamber;

reacting the silicon and the carbon in the presence of the plasma to deposit a silicon carbide layer having a dielectric constant less than 7.0 on the substrate in the chamber;

depositing a first dielectric layer *in situ* on the silicon carbide layer; and then depositing a photoresist layer.

15. (Twice Amended) The method of claim 14, further comprising:

depositing a silicon carbide etch stop *in situ* on the first dielectric layer; and

depositing a second dielectric layer *in situ* on the silicon carbide etch stop prior to depositing the photoresist layer.

16. (Twice Amended) The method of claim 15, further comprising depositing a silicon carbide anti-reflective coating *in situ* on the second dielectric layer prior to depositing the photoresist layer.

17. (Amended) The method of claim 15, wherein the photoresist layer is deposited on the second dielectric layer.

18. (Twice amended) The method of claim 14, further comprising:
depositing a silicon carbide layer on the first dielectric layer prior to depositing the photoresist layer.

19. (Twice Amended) The method of claim 14, further comprising depositing a silicon carbide anti-reflective coating *in situ* on the first dielectric layer prior to depositing the photoresist layer.

C1
Cont
D' Cont

20. (Amended) The method of claim 14, wherein the substrate has an effective dielectric constant of no greater than about 5.

21. (Amended) The method of claim 14, wherein the silicon and the carbon are derived from an organosilane compound, substantially independent of other carbon sources.

22. (Amended) The method of claim 14, wherein the silicon and the carbon are derived from a common source, and reacting the silicon and the carbon in the presence of the plasma to form silicon carbide occurs independent of the presence of a separate hydrogen source.

23. (Amended) The method of claim 14, wherein the silicon and the carbon are derived from a common source and reacting the silicon and the carbon in the presence of the plasma to form silicon carbide occurs independent of the presence of a separate carbon source.

24. (Amended) The method of claim 14, further comprising patterning and etching the substrate to form a damascene structure.

25. (Amended) The method of claim 14, wherein the silicon carbide layer is an anti-reflective coating that has a single selected thickness to produce a reflectivity of about 7 percent or less when an underlying dielectric layer below the anti-reflective coating has a thickness from about 5000 Å to about 10000 Å.

26. (Amended) A method of *in situ* deposition of silicon carbide on a substrate, comprising:

depositing a silicon carbide barrier layer on the substrate;

depositing a first dielectric layer *in situ* on the barrier layer;

depositing an etch stop *in situ* on the first dielectric layer;

depositing a second dielectric layer *in situ* on the etch stop;

depositing a silicon carbide anti-reflective coating *in situ* on the second dielectric layer; and

depositing a photoresist layer on the silicon carbide anti-reflective coating.

27. (Amended) The method of claim 26, wherein the barrier layer, etch stop, and anti-reflective coating each comprises silicon carbide material having a dielectric constant less than 7.0.

28. (Amended) The method of claim 26, wherein the substrate has an effective dielectric constant of no greater than about 5.

29. (Amended) The method of claim 26, further comprising removing a contaminant on the substrate by:

a) introducing a reducing agent comprising nitrogen and hydrogen into a chamber;

b) initiating a reducing plasma in the chamber;

c) exposing an oxide on the substrate to the reducing agent.